

ABSTRACT OF THE INVENTION

A purification apparatus, kit and method for purifying DNA, RNA, proteins, antigens, antibodies and cells. The apparatus has a wand and a reservoir tube. The wand is made of a cap, a sample collection assembly and an elongated shaft connecting the cap to the sample collection assembly. The sample collection assembly has a series of microstructures on its surface, or microparticles enclosed within it for increasing the surface area of the sample collection assembly. The increased surface area permits maximum exposure to and binding of target molecules thereto. The reservoir tube associated with the wand has one end defining an opening and a second end that is closed and preferably cone or cylindrical shaped. The cap of the wand securely and sealingly fastens to the open end of the reservoir tube with the shaft and the sample collection assembly fitting easily inside the reservoir tube. The apparatus, kit and methods can be used for protein and nucleic acids detection by colorimetric, luminescent, fluorescent or electrochemical means through attachments for detecting such signals. The apparatus, kit and methods can also be used in conjunction with an attachment for thermal regulation to perform nucleic acids amplification. The apparatus, kit and methods can further be configured for integrated, high throughput purification and detection of proteins and nucleic acids.